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A Note on some Interesting Results following the Internal Administration of Arsenic in Canker and other Diseases of the Foot in Horses

BY

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Imperial Bacteriologist, Muktesar Laboratory



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A Note on some Interesting Results following the Internal Administration of Arsenic in Canker and other Diseases of the Foot in Horses.

WHILE carrying out experiments with arsenious oxide in the curative treatment of Surra in horses I had an opportunity of observing the effects of arsenic in certain other pathological conditions, especially that of canker of the foot.

The value of arsenic in veterinary practice, as a general tonic, is well known and it is occasionally given to improve the coat and condition of horses. In all our experiments with Surra, which extended to three hundred or more ponies and horses, this tonic effect of arsenic was most marked. Animals in the last stage of emaciation rapidly regained their strength and condition.

In these cases arsenic was administered in full sub-toxic doses, commencing at about one gramme and gradually increasing to about three grammes. Ten doses were given at an interval of one to two days between each dose. In some instances subcutaneous injections of atoxyl were given alternately with the arsenic by mouth.

A full description* of this method of treatment, by which we have cured many cases of Surra in horses, has been previously published and need not be further described here.

Canker of the Foot.

Among a number of country-bred ponies, purchased for experimental work and which had been inoculated with Surra and were under treatment with arsenic, one was observed to be suffering from canker of the off-fore foot. The disease was of long standing, the foot being deformed, the heels contracted, and the sole covered with

* Parasitology, Vol. III, pp. 73, 107. Parasitology, Vol. III, No. 3, Oct. 1910.
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a spongy fungoid growth from which a foul odour emanated. The foot was dressed occasionally with tar as an antiseptic, during the time that the pony was undergoing his course of arsenic treatment for Surra. The pony had a relapse after the first course of arsenic and received a second course of treatment which resulted in a cure. In all he received twenty doses of arsenic in bolus. During the second course of treatment, my attention was drawn to the improvement which had taken place in the diseased foot. The fungoid growth had entirely disappeared and a firm and healthy tissue covered the sole and frog. By the time that the second course of treatment was completed the foot was to all appearance normal; no pain or tenderness was evinced when pressure was applied to the sole and frog and the pony was going sound. This animal was kept under observation for twelve months and the foot remained in a healthy condition. In order to ascertain how far in this case the disappearance of the disease was due to the administration of arsenic, I obtained at a later date three horses suffering from canker of the foot. Two were aged, country-bred horses from a Native Cavalry Regiment. The disease was of some two years standing and all four feet were badly affected. The feet were long and club-shaped and the sole and frog had been completely replaced by a fungoid growth, which bled on the slightest provocation. The horses were in pain and moved with difficulty on the toes of the feet. These two cases received three courses of arsenic and atoxyl during a period of six months. The doses were given on the same method as for the treatment of Surra. Each course lasted about three weeks and consisted of five doses of arsenic in bolus and five subcutaneous injections of atoxyl. Between each course an interval of three to four weeks was allowed.

After the first course the condition of the feet showed a very marked improvement. The sole had assumed a healthy appearance; almost all the fungoid growth was gone and healthy tissue had taken its place.

After the second course of treatment the feet had returned to a quite normal condition. The disease had entirely disappeared, the sole was covered with hard and sound tissue and the frog and bars had grown into shape. The horses were able to put the feet to the ground without pain and walked sound. The whole structure of the feet appeared normal and healthy with the exception of a small area in the sole in the near hind of one horse and in the off hind of

the other. This area, which was about the size of a shilling, was less firm than the surrounding parts and, on pressure, pain was evinced.

A third course of treatment followed, after which no trace of any disease of the feet could be detected. The horses were kept under observation for twelve months. The feet remained healthy with the exception that in each case the area in the hind foot, which was the last to heal, again softened and on cutting down it was found that a small amount of cankerous growth still remained.

These cases received no further treatment. The third horse was a waler from the Artillery. The off-fore foot was extensively diseased, the other three only to a slight extent. He was given two courses of treatment with arsenic and atoxyl. The same rapid improvement in the feet followed and in about two months it was impossible to detect any abnormality or disease of the feet. The horse was going sound and was returned to duty.

I was informed, however, that this horse was again attacked with canker of the foot in the following year.

In none of these cases was local treatment resorted to, beyond the application of tar or other antiseptic dressing to the diseased feet.

It has not been possible to make any further experiments on this subject as other cases of canker have not been procurable up to the present.

These four cases have, however, been sufficient to demonstrate that the internal administration of arsenic in large doses at spaced intervals, either alone or in combination with subcutaneous injections of atoxyl, produces a very rapid and remarkable improvement in cases of canker of the foot.

All lesions of the disease disappear, and healthy tissue takes the place of the fungoid growth. The sole and frog become hard and to all outward appearance healthy, and the animal goes sound and is fit for work. The experiments have not been sufficient to discover if a permanent cure of the disease can be obtained by this treatment. The combination of local treatment with the internal administration of arsenic would in all probability give more permanent results. The arsenic acts in the first place as a tonic and improves the general condition. It is also recognised that arsenic increases the proliferation of epithelial cells. The rapid formation

of the new and healthy tissue, which gradually curtails and replaces the fungoid growth, is in response to this stimulus.

It is also possible that arsenic may have a direct action on the still unknown causal organism of canker.

Thrush, Sanderack and Brittle Hoof.

The same method of arsenic treatment has been tried with the most excellent results in other diseases of the feet, such as Thrush, Sanderack, defective and brittle hoof, cracked heels, etc. In some cases the internal treatment alone has been relied on and in others it has been combined with local applications.

In all cases a rapid improvement and cure has resulted. With the combined treatment the results were somewhat more rapidly obtained.

One case, I may mention, of a young horse which was incapable of being worked owing to defective fore feet. The wall of the foot was not more than from two and a half to three inches in length; the edges were frayed and fissured upwards from a half to one inch. The sole of the feet was thin and the horse walked with great difficulty and pain. The application of blisters to the coronets had been tried but failed to produce much improvement in the condition of the wall of the feet.

The horse was put under a course of arsenic. After the first course the growth of the wall had considerably increased and was of more healthy texture. Two further courses of arsenic were given within three months at which time the feet had grown to a normal size and a dense wall had formed, which showed no tendency to brittleness. The horse was shod and went sound.

The Absorbent Action of Arsenic on Melanotic and other Tumours.

Another interesting observation regarding the action of arsenic was made during the experiments with Surra.

One subject of these experiments was a mare which had been cast from the Army for melanotic tumours. These tumours varied in size from that of a marble to a cricket ball and were situated on the body, neck and thighs. The mare was inoculated with Surra and received two courses of treatment with arsenic and atoxyl.

After the first course of treatment it was noticed that many of the smaller tumours had disappeared and by the time the second course was completed even the large tumours had entirely vanished. The mare was cured of Surra and kept under observation for some 18 months. About six months after the arsenic treatment the melanotic tumours again formed and were in a few months as large and numerous as before.

In order to test the absorbent power of arsenic on other tumours, I obtained two horses, one having a tumour on the inside of the off fetlock. This tumour had originated about twelve months previously from a bursati sore. The tumour at this time involved about three inches above and three below the fetlock joint and was so large that it brushed against the opposite fetlock. It had been treated without improvement for several months. The horse was given three courses of arsenic and atoxyl during six months. Antiseptic dressings were applied to the tumour. No local treatment, except antiseptic dressings, was used. The tumour gradually became absorbed and by the expiration of six months it was completely removed, leaving a granulating surface of some three inches in diameter which eventually healed.

The other case was one of epithelioma involving the penis. The tumour was considerably larger than a cricket ball and it and part of the penis protruded from the sheath.

The surface of the tumour was raw and ulcerated.

Antiseptic dressings were applied and the horse was placed on a course of internal treatment with arsenic.

Two courses of arsenic were given. The tumour decreased to about half its original dimensions. There was very marked proliferation of the surrounding normal tissue which in many places invaded and encapsulated parts of the tumour.

At this time the horse accidentally contracted tetanus and died.

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